
Inclusion of *Neolourya* in *Peliosanthes* (Convallariaceae)

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ABSTRACT. *Neolourya* is included in *Peliosanthes* (Convallariaceae), as their difference is confined to the shape of the style and seems insufficient for generic delimitation. As a result, a new combination, *P. weberi* (L. Rodriguez) N. Tanaka, is proposed. The other two species of *Neolourya*, *N. pierrei* L. Rodriguez and *N. thailandica* K. Larsen, are reduced to synonymy of *P. weberi*, as no appreciable morphological difference is found among them. *Peliosanthes weberi* is characterized chiefly by its slender tortuous style and by the antisepalous anthers often more concealed than the antipetalous ones by the coroniform united filaments.

Key words: Convallariaceae, Indochina, *Neolourya*, *Peliosanthes*.

Rodriguez (1934a) founded the genus *Neolourya* with two species: *N. weberi* L. Rodriguez from northern Vietnam and *N. pierrei* L. Rodriguez from Cambodia. Later, Larsen (1966) added another species, *N. thailandica* K. Larsen from Thailand, to the genus, bringing the total to three. According to Rodriguez (1934a, 1934b), *Neolourya* differs from its most closely related genus, *Peliosanthes* Andrews, by the cylindrical, tortuous slender style (vs. pyramidal or conic style). No other marked difference has been observed between the two genera. The sole difference in their styles seems to be insufficient for warranting *Neolourya* as a separate genus. *Neolourya* has already been regarded as congeneric with *Peliosanthes* by Hutchinson (1959), Jessop (1976), Mabberley (1987, 1997), Conran and Tamura (1998), Tanaka (1999), and Chen and Tamura (2000), but none of these authors carried out nomenclatural transfers between the two genera.

Rodriguez (1934b) distinguished *Neolourya weberi* from *N. pierrei* by the ovate-rounded perianth segments (vs. ovate-lanceolate segments) and by the scape (including the inflorescence) almost equaling the petioles in length (vs. the scape much shorter than the petioles). In his article (Rodriguez, 1934b), he cited only one specimen for *N. weberi* (Weber s.n., type) and two specimens for *N. pierrei* (Pierre 6689, type, and Harmand 1311). On re-examination of these specimens, the perianth seg-

ments of the two species are more or less ovate and do not seem to be significantly distinct in shape (Figs. 1A, B, 2A, B). The two species also do not seem to differ necessarily in the second diagnostic character (viz., the scape length as compared with the petiole). In those specimens, the longest scapes of the two species are equal in length (both 11 cm). The two specimens of *N. pierrei* bear many leaves, and their petioles vary widely in length from 4.5 to 36 cm. On the other hand, the type specimen of *N. weberi* consists of two scapes and two leaves each separately picked from a plant(s) under cultivation in Paris, and both of their petioles measure 11.5 cm. This length falls within the range of variation in the petiolar length of *N. pierrei*. This fact poses the possibility that the type specimen of *N. weberi* by chance bore leaves with petioles equaling the scapes. Only one (type) specimen of *N. weberi* seems insufficient to prove its distinction from *N. pierrei* in the second diagnostic character. Having no other marked difference, *N. weberi* and *N. pierrei* do not seem to be different entities.

Larsen (1966) reported that *Neolourya thailandica* deviates from *N. weberi* and *N. pierrei* by the corkscrew-formed style and by a tendency to form more than two ovules (2 to 4) per locule. However, as Rodriguez (1934a, 1934b) has already described, the last two species have tortuous styles (Figs. 1D, 2E; for *N. pierrei* see also fig. 65-10, -11 in Rodriguez, 1934b), which are not distinguishable from those of *N. thailandica* (fig. 1d in Larsen, 1966; van Beusekom & Phengkhlai 66 from the type locality (L); Fig. 3E, F from Thai material identifiable as *N. thailandica*). Regarding the ovule number, I examined six ovaries from one living plant from northern Thailand (Yahara s.n., TEU), which coincides well with the description of *N. thailandica*. All of the ovaries were 3-locular. Three of them had only 2 ovules per locule (Fig. 3I). Two ovaries contained 3-2-2 ovules, respectively. One had 3-3-2 ovules. Of a total of 18 locules examined, 14 contained 2 ovules, and 4 contained 3 ovules. On the other hand, *N. weberi* and *N. pierrei* are reported to form 2 ovules per locule (Rodriguez, 1934a, 1934b). As the three species have the char-

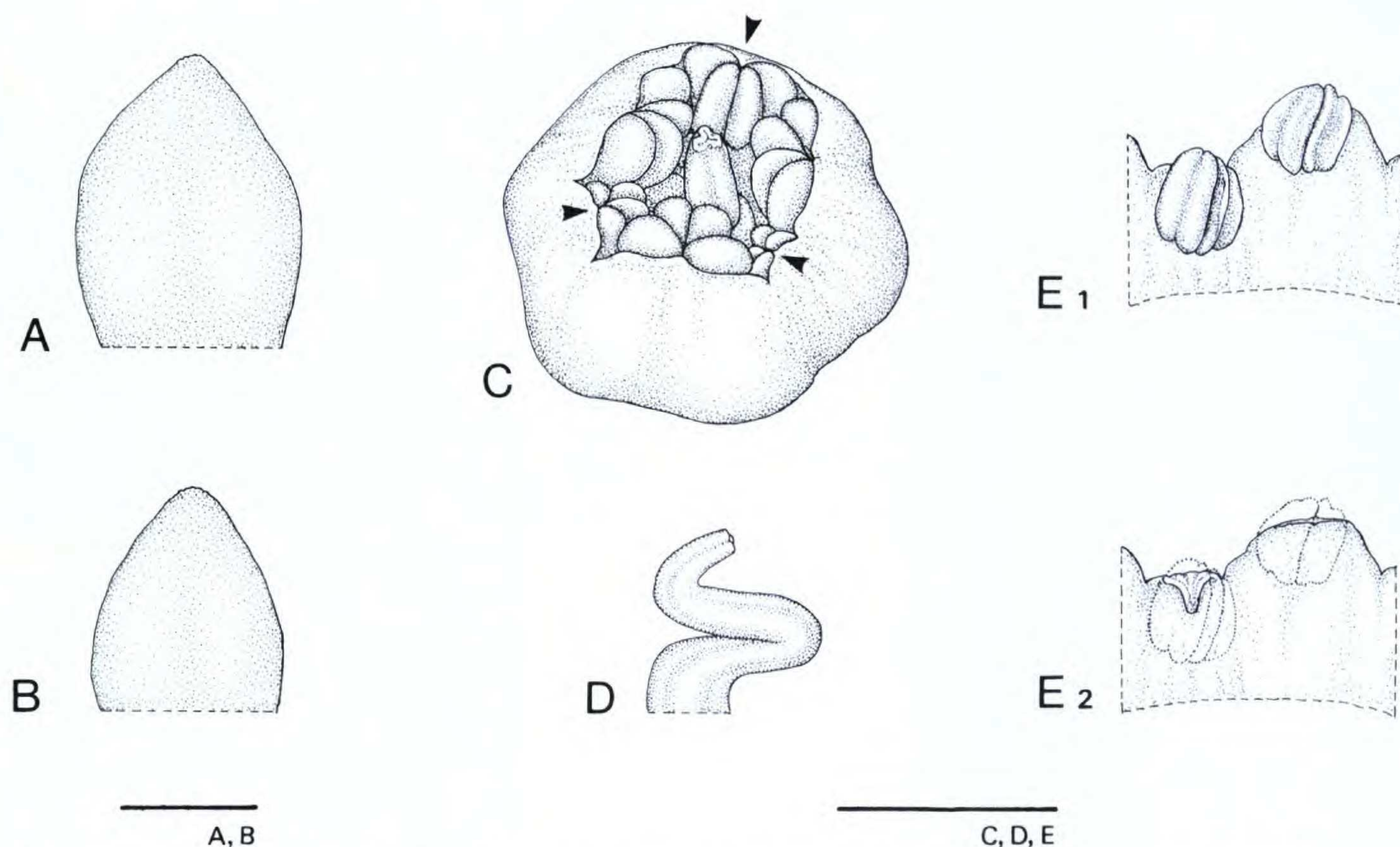


Figure 1. *Peliosanthes weberi* (L. Rodriguez) N. Tanaka (*Neolourya weberi* L. Rodriguez) from northern Vietnam. —A, B. Abaxial view of two outer perianth segments from different flowers. —C. Pistil and monadelphous androecium from bud with perianth removed. Arrowheads point to antisepalous anthers. —D. Style. —E₁. Adaxial view of part of monadelphous androecium with antisepalous (left) and antipetalous anther (right). —E₂. Same as E₁, but depicted with anthers (outlines stippled) removed. Drawn by Noriyuki Tanaka from *Weber s.n.* (P). Scale bars = 1 mm.

acter 2 ovules per locule in common, *N. thailandica* cannot clearly be separated from the other two species by the ovule number. The information on their ovule number is based on limited material,

and hence examination of more samples in the future is needed.

Larsen (1966) regarded *Neolourya thailandica* as deviating from *N. weberi* by having a scape much

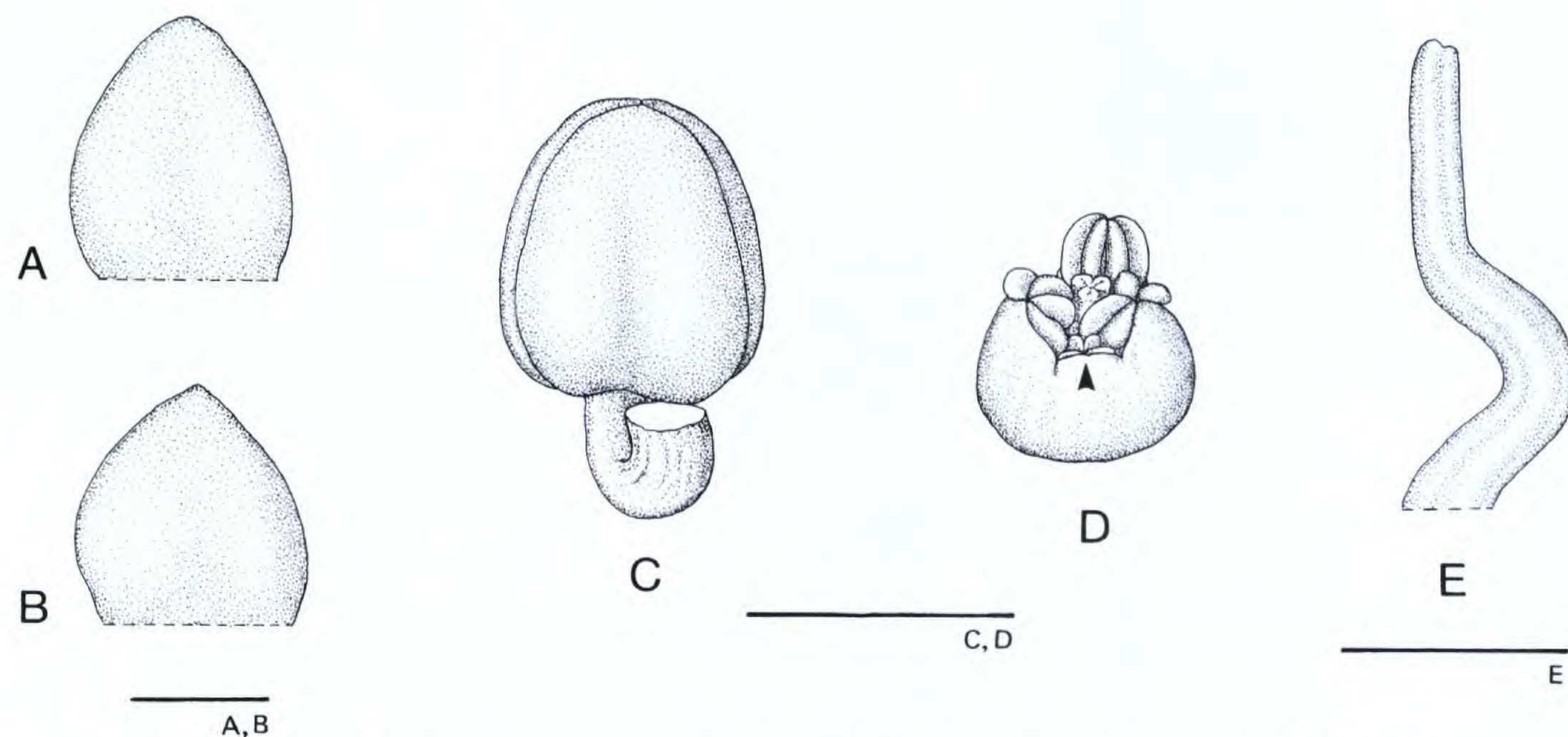


Figure 2. *Peliosanthes weberi* (*Neolourya pierrei* L. Rodriguez) from Cambodia and Laos. —A, B. Abaxial view of two outer perianth segments from different flowers. —C. Young bud showing shallow furrow on outer perianth segment in forefront. —D. Pistil and monadelphous androecium from young bud with perianth removed. Arrowhead points to antisepalous anthers. —E. Style. A, C, D from *Pierre 6689* (P). B, E from *Harmand 1311* (P). Drawn by Noriyuki Tanaka. Scale bars = 1 mm.

shorter than the petiole. According to his description of *N. thailandica*, the scape is 8 cm long, and the petioles are 10–16 cm long. In one specimen from southern Vietnam (*Dournes s.n.*, P), which corresponds well with the description of *N. thailandica*, the scape is ca. 9 cm long and the petioles 9–11 cm long. These measurements are comparable with those of *N. weberi* (see above).

Larsen (1966) also reported that *Neolourya thailandica* can be distinguished from *N. pierrei* by the dorsal furrow of the outer perianth segments. In the few living plants I examined from Thailand that can be identified as *N. thailandica* (e.g., *Yahara s.n.*, TEU), the furrows are generally shallow (Fig. 3A, B, D, E, H) and often rather indistinct (Fig. 3C). Some outer perianth segments of the type specimen of *N. pierrei* (*Pierre 6689*, P) also show traces of a furrow (Fig. 2C) and are not significantly different from the segments of *N. thailandica*.

Larsen (1966) also noted that *Neolourya thailandica* differs from *N. pierrei* by the totally hidden anthers on the incurved united filaments (fig. 1d, e in Larsen, 1966; Fig. 3D, E, G, H). However, the anthers of *N. pierrei* are also more or less hidden by the filaments (Fig. 2D), and it is difficult to distinguish the two species clearly by this character.

The united filaments of the three species are 6-lobed at the apex (Fig. 3D), and the anthers are dorsifixed to the tip of each lobe (Fig. 1E, 3G). The antisealous anthers, which are opposite to the outer perianth segments, often take a lower position and are more hidden by the united incurved coroniform filaments than the antipetalous ones, which are opposite to the inner perianth segments (Figs. 1C, E, 2D, 3D, E, G, H). This is due to a stronger incurvature (or bend) or shorter length of the lobes of the filaments to which the antisealous anthers are attached than that of the lobes to which the antipetalous ones are attached (Figs. 1E, 3E, G, H).

The perianth of *Neolourya weberi* is reported as white (Rodriguez, 1934a, 1934b), while that of *N. thailandica* is purplish green (Larsen, 1966) or green (*van Beusekom & Phengkhlai 66*, L). The perianth color of *N. pierrei* is unknown. The difference in floral color alone, even if present, seems insufficient for their specific delimitation.

As no marked difference is found among *Neolourya weberi*, *N. pierrei*, and *N. thailandica*, they are regarded here as conspecific. *Neolourya weberi* and *N. pierrei* were published simultaneously and earlier than *N. thailandica*, as noted earlier. In this paper *N. weberi* is chosen as the name for this unified species in the genus. For the reason stated earlier, *N. weberi* is transferred to *Peliosanthes* as

P. weberi. *Neolourya pierrei* and *N. thailandica* are reduced to synonyms of *P. weberi*.

Jessop (1976) reduced *Neolourya weberi* and *N. pierrei* to synonymy of *Peliosanthes tetra* subsp. *humilis* (Andrews) Jessop. *Peliosanthes weberi* as circumscribed here is particularly unique for its slender tortuous style, and at least by this character it can be delimited from *P. tetra* subsp. *humilis* as an independent species.

Peliosanthes was once referred to the family Haemodraceae by Bentham (1883). Rodriguez (1934a, 1934b) also placed both *Neolourya* and *Peliosanthes* in the same family. However, Dahlgren et al. (1985, *Neolourya* not mentioned), Mabberley (1997), Conran and Tamura (1998), and Tanaka (1999) assigned *Peliosanthes* to the Convallariaceae. The appropriateness of the latter assignment is supported by the result of a molecular analysis of the DNA sequence of the *trnK* and *rbcL* regions of the chloroplast (Yamashita & Tamura, 2000).

Peliosanthes is closely related to *Ophiopogon* Ker Gawler and *Liriope* Loureiro (Krause, 1930), and it seems appropriate that these three genera should be grouped into the tribe Ophiopogoneae under Convallariaceae (Dahlgren et al., 1985; Conran & Tamura, 1998). In comparison with *Ophiopogon* and *Liriope*, *Peliosanthes* (including *Neolourya*) is characterized chiefly by the broad leaf blades of which the longitudinal and transverse veins are prominent on both surfaces and by the united staminal filaments, which are fused to the perianth basally (Fig. 3D, E, G, H).

Peliosanthes weberi (L. Rodriguez) N. Tanaka, comb. nov. Basionym: *Neolourya weberi* L. Rodriguez, Bull. Mus. Hist. Nat. (Paris) Ser. II, 6: 97. 1934. TYPE: [Vietnam.] Tonkin, cult. in Hort. Bot. Paris., mai 1905, *Weber s.n.* (holotype, P).

Neolourya pierrei L. Rodriguez, Bull. Mus. Hist. Nat. (Paris) Ser. II, 6: 97. 1934. Syn. nov. TYPE: [Cambodia.] Cochinchine, île de Phu Quoc, 1874, *L. Pierre 6689* (holotype, P).

Neolourya thailandica K. Larsen, Bot. Not. 119: 196. 1966. Syn. nov. TYPE: Thailand. Prachinburi: Khao Yai, 650 m, 1963, cult. in Bot. Gard. Copenhagen, K. Larsen 10752 (holotype, AAU not seen).

Rhizome subnodose, 3–5 mm diam., producing fibrous roots to ca. 3.5 mm diam. Leaves basal, tufted; blades narrowly elliptic, attenuate at both ends, 13–24.5 × 2.8–5.6 cm; longitudinal veins 13 to 27; transverse veinlets numerous at close intervals, almost parallel; petioles 4–36 cm long. Scape (including rachis of inflorescence) nearly erect, to 13.5 cm long, usually shorter than petioles, dark

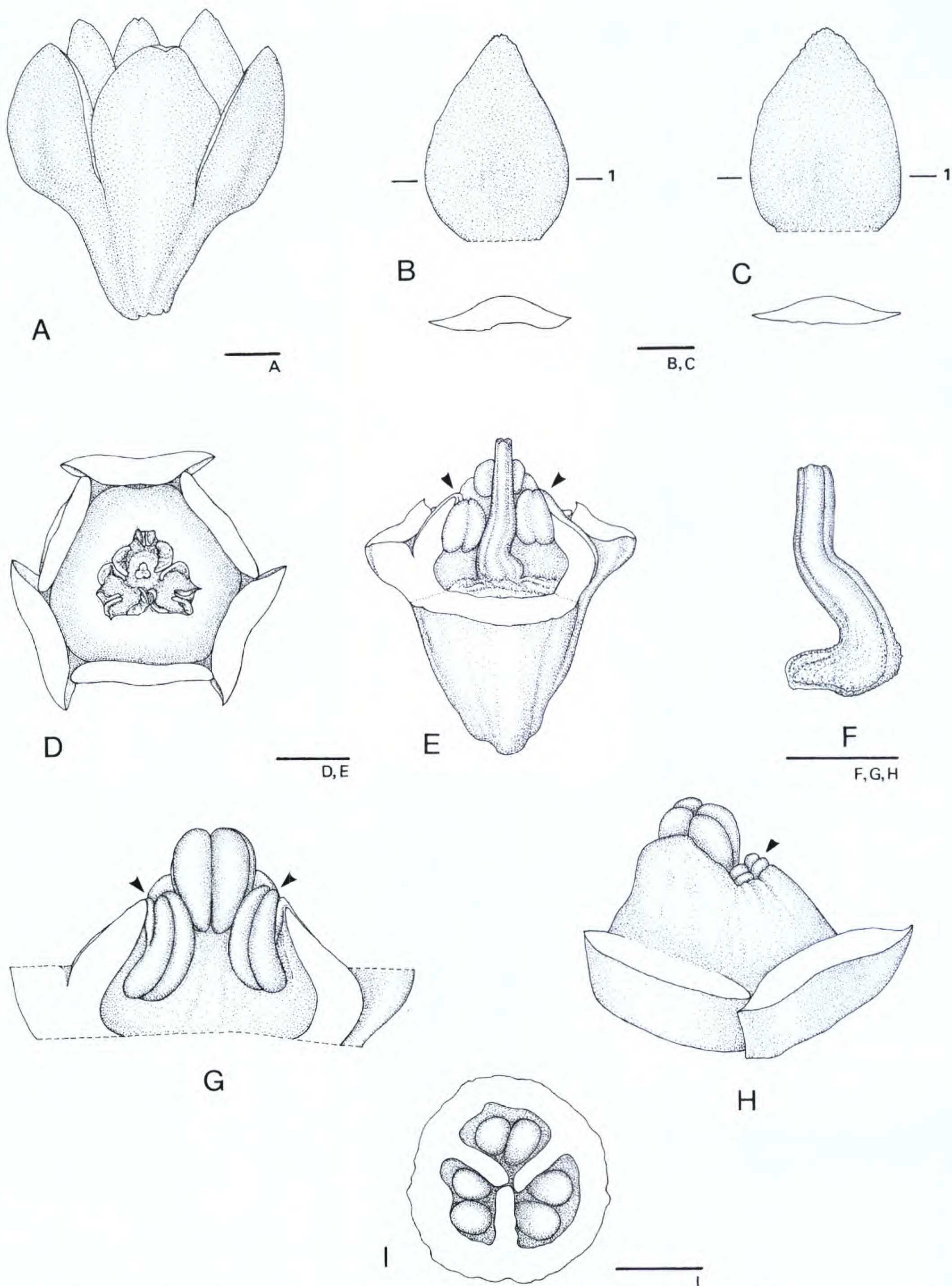


Figure 3. *Peliosanthes weberi* (*Neolourya thailandica* K. Larsen) from northern Thailand. —A. Lateral view of flower. —B, C. Abaxial view of outer perianth segments (above) and their cross sections (below) at position indicated by horizontal line (1), from different flowers. —D. Front view of flower with perianth segments removed, leaving their basal parts. —E. Part of dissected flower. —F. Style. —G. Interior of part of monadelphous androecium. —H. Abaxial view of part of monadelphous androecium. —I. Cross section of ovary with two ovules in each locule. In E, G, H, antisepalous anthers are indicated by arrowheads. Drawn by Noriyuki Tanaka from a living plant (*Yahara s.n.*, TEU). All scale bars = 1 mm.

purple (at least in Thai material). Inflorescence a terminal raceme usually sharing $\frac{1}{2}$ to $\frac{3}{4}$ of scape; flowers solitary in axils of bracts, usually cernuous, each subtended by 2 bracts, of which inner one shorter than outer; bracts narrowly lanceolate, acute, scarious at margin, to 1.8 cm long (sterile bracts on peduncle to 3 cm long), reducing in size toward apex; pedicels articulate at or near summit, to 7 mm long. Perianth 4–5.5 mm across, 6-cleft, fleshy; segments ovate, obtuse to subacute, 1.7–3.5 mm long, 1.3–2.5 mm wide; tube obconical, 1.7–2.5 mm long; filaments united laterally, fused to perianth basally, part free from perianth annular, coroniform, incurved, 6-lobed at apex, 0.7–1.3 mm high; anthers 6, dorsifixed to tip of lobes of united filaments, 0.6–1 mm long, introrse, orbicular when dehiscent, antisepalous anthers often more hidden than antipetalous ones by united filaments; pistil 1; style slender, slightly attenuate toward apex, tortuous, 2–3 mm long; stigma small, 3-lobed; ovary inferior, 3-locular; ovules 2 to 4 per locule, basal, collateral, anatropous.

Distribution. Thailand, Laos, Vietnam, and Cambodia.

Other selected specimens examined. THAILAND. **Nakhon Ratchasima:** Khao Yai Nat. Park, Khao Kieo, ca. 1300 m, 15 Mar. 1968, *C. F. van Beusekom* & *C. Phengkhlai* 66 (L). **Saraburi:** Muang District, Sahn Lahn forest, 125 m, 13 Apr. 1974, *J. F. Maxwell* 74-272 (L). **Chiang Mai:** Doi Sutep, 800 m, 1984, originally collected by *T. Yahara s.n.*, cult. in Bot. Gard. of Tokyo Univ., then at Teikyo Univ., 6 July 2003, *N. Tanaka s.n.* (TEU). LAOS. [Bassac:] Bassin d'Attopeu, 1875–[18]77, *F. F. J. Harmand* 1311 (P). VIETNAM. **Dac Lac:** Hau Bôn (Cheo Reo), mai [19]67, *J. Dournes s.n.* (P—2).

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